

# Type AFK -55 °C to 105 °C

## SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105 °C

### Low Impedance and Long-Life for Filtering, Bypassing and Power Supply Decoupling



Type AFK Capacitors are the best and by a wide margin. With 40% to 60% lower impedance, 30% to 50% smaller case size and more than twice the life compared to low-ESR type AFC, the Type AFK also excels at cold performance down to -55 °C. In addition, this terrific low-impedance performance, approaching low-ESR tantalum capacitors, is at a significant cost savings compared to tantalum. The vertical cylindrical cases facilitate automatic mounting and reflow soldering into the same footprint of like-rated tantalum capacitors except without the need for voltage derating.

#### Highlights

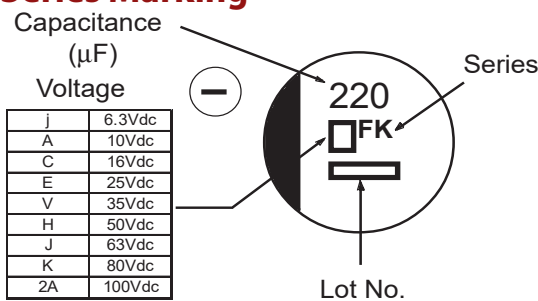
- +105 °C, Up to 5000 Hour Load Life
- Capacitance Range: 3.3  $\mu$ F to 6800  $\mu$ F
- Voltage Range: 6.3 Vdc to 100 Vdc
- AEC-Q200 Compliant

#### Specifications

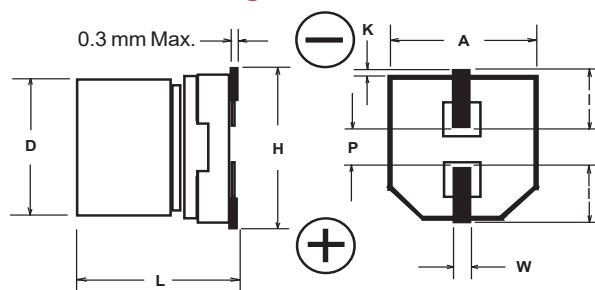
|                                        |                                                                                                                                                                                                                                                                                                                             |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|---------|------|------|------|--|-----------|----------|--------|-------|--------|---------|-----|------|-------|------|------|------|------|------|-----|------|------|------|
| Capacitance Range                      | 1.0 μF to 1500 μF                                                                                                                                                                                                                                                                                                           |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| Capacitance Tolerance                  | ±20% @ 120 Hz and +20 °C                                                                                                                                                                                                                                                                                                    |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| Rated Voltage                          | 6.3, 10, 16, 25, 35, 50, 63, 80 & 100 Vdc                                                                                                                                                                                                                                                                                   |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| Operating Temperature Range            | –55 °C to +105 °C                                                                                                                                                                                                                                                                                                           |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| Leakage Current                        | I = 0.01 CV or 3 (μA) whichever is greater after 2 minutes                                                                                                                                                                                                                                                                  |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| Dissipation Factor                     | <table><tr><td>6.3V</td><td>10V</td><td>16V</td><td>25V</td><td>35V</td><td>50V</td><td>63V</td><td>80V</td><td>100V</td></tr><tr><td>0.26</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.1</td><td>0.08</td><td>0.08</td><td>0.07</td></tr></table><br>Add 0.02 per 1000 μF for values greater than 1000 μF |        |       |        |         |      |      |      |  | 6.3V      | 10V      | 16V    | 25V   | 35V    | 50V     | 63V | 80V  | 100V  | 0.26 | 0.19 | 0.16 | 0.14 | 0.12 | 0.1 | 0.08 | 0.08 | 0.07 |
| 6.3V                                   | 10V                                                                                                                                                                                                                                                                                                                         | 16V    | 25V   | 35V    | 50V     | 63V  | 80V  | 100V |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| 0.26                                   | 0.19                                                                                                                                                                                                                                                                                                                        | 0.16   | 0.14  | 0.12   | 0.1     | 0.08 | 0.08 | 0.07 |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| Ripple Current Multipliers (Frequency) | <table><tr><td>Frequency</td><td>50/60 Hz</td><td>120 Hz</td><td>1 kHz</td><td>10 kHz</td><td>100 kHz</td></tr><tr><td></td><td>0.70</td><td>.0.75</td><td>0.90</td><td>0.95</td><td>1.00</td></tr></table>                                                                                                                 |        |       |        |         |      |      |      |  | Frequency | 50/60 Hz | 120 Hz | 1 kHz | 10 kHz | 100 kHz |     | 0.70 | .0.75 | 0.90 | 0.95 | 1.00 |      |      |     |      |      |      |
| Frequency                              | 50/60 Hz                                                                                                                                                                                                                                                                                                                    | 120 Hz | 1 kHz | 10 kHz | 100 kHz |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
|                                        | 0.70                                                                                                                                                                                                                                                                                                                        | .0.75  | 0.90  | 0.95   | 1.00    |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| Load Life                              | 2000 h @ 105 °C, 4.0 — 10.0 mm dia.<br>5000 h @ 105 °C, 12.5 — 18.0 mm dia.<br>Δ Capacitance ±30%<br>DF: ≤ 200% of limit<br>DCL: ≤ 100% of limit                                                                                                                                                                            |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| Shelf Life                             | 1000 h @ 105 °C<br>Δ Capacitance ±30%<br>DF: ≤ 200% of limit<br>DCL: ≤ 100% of limit                                                                                                                                                                                                                                        |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |
| RoHS Compliant                         |                                                                                                                                                                                                                                                                                                                             |        |       |        |         |      |      |      |  |           |          |        |       |        |         |     |      |       |      |      |      |      |      |     |      |      |      |

RoHS Compliant

#### AFK Series Marking



#### Outline Drawing



#### Case Dimensions

| Case Code | D $\pm$ 0.5 | L              | A $\pm$ 0.2 | H (max) | I (ref) | W              | P (ref) | K (mm)           |
|-----------|-------------|----------------|-------------|---------|---------|----------------|---------|------------------|
| B         | 4.0         | 5.8 $\pm$ 0.3  | 4.3         | 5.5     | 1.8     | 0.65 $\pm$ 0.1 | 1.0     | 0.35 +0.15/-0.20 |
| C         | 5.0         | 5.8 $\pm$ 0.3  | 5.3         | 6.5     | 2.2     | 0.65 $\pm$ 0.1 | 1.5     | 0.35 +0.15/-0.20 |
| D         | 6.3         | 5.8 $\pm$ 0.3  | 6.6         | 7.8     | 2.6     | 0.65 $\pm$ 0.1 | 1.8     | 0.35 +0.15/-0.20 |
| X         | 6.3         | 7.9 $\pm$ 0.3  | 6.6         | 7.8     | 2.6     | 0.65 $\pm$ 0.1 | 1.8     | 0.35 +0.15/-0.20 |
| E         | 8.0         | 6.2 $\pm$ 0.3  | 8.3         | 9.5     | 3.4     | 0.65 $\pm$ 0.1 | 2.2     | 0.35 +0.15/-0.20 |
| F         | 8.0         | 10.2 $\pm$ 0.3 | 8.3         | 10.0    | 3.4     | 0.90 $\pm$ 0.2 | 3.1     | 0.70 $\pm$ 0.20  |
| G         | 10.0        | 10.2 $\pm$ 0.3 | 10.3        | 12.0    | 3.5     | 0.90 $\pm$ 0.2 | 4.6     | 0.70 $\pm$ 0.20  |
| H         | 12.5        | 13.5 $\pm$ 0.5 | 13.5        | 15.0    | 4.7     | 0.90 $\pm$ 0.3 | 4.4     | 0.70 $\pm$ 0.30  |
| P         | 16.0        | 16.5 $\pm$ 0.5 | 17.0        | 19.0    | 5.5     | 1.2 $\pm$ 0.3  | 6.7     | 0.70 $\pm$ 0.30  |
| R         | 18.0        | 16.5 $\pm$ 0.5 | 19.0        | 21.0    | 6.7     | 1.2 $\pm$ 0.3  | 6.7     | 0.70 $\pm$ 0.30  |

# Type AFK -55 °C to 105 °C

## SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105 °C

### Ratings Table

| Cap<br>(µF)             | Catalog<br>Part Number | Max.<br>DCL<br>2 min<br>(µA) | Max.<br>Dissipation<br>Factor<br>@120 Hz/20 °C | Max.<br>ESR<br>@100 kHz/20 °C<br>(Ω) | Impedance<br>@ 100 kHz/20 °C<br>(Ω) | Max.<br>Ripple Current<br>@ 100 kHz/105 °C<br>(mA) | Case<br>Code | Size<br>D x L<br>(mm) | Quantity<br>per Reel |
|-------------------------|------------------------|------------------------------|------------------------------------------------|--------------------------------------|-------------------------------------|----------------------------------------------------|--------------|-----------------------|----------------------|
| 6.3 Vdc ( 8 Vdc Surge ) |                        |                              |                                                |                                      |                                     |                                                    |              |                       |                      |
| 22                      | AFK226M06B12T-F        | 3.0                          | 0.26                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 47                      | AFK476M06B12T-F        | 3.0                          | 0.26                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 47                      | AFK476M06C12T-F        | 3.0                          | 0.26                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 100                     | AFK107M06C12T-F        | 6.3                          | 0.26                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 100                     | AFK107M06D16T-F        | 6.3                          | 0.26                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 220                     | AFK227M06D16T-F        | 13.9                         | 0.26                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 330                     | AFK337M06X16T-F        | 20.8                         | 0.26                                           | 0.340                                | 0.340                               | 280                                                | X            | 6.3 x 7.7             | 900                  |
| 330                     | AFK337M06E16T-F        | 20.8                         | 0.26                                           | 0.260                                | 0.260                               | 300                                                | E            | 8 x 6.2               | 1000                 |
| 470                     | AFK477M06F24T-F        | 29.6                         | 0.26                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 1000                    | AFK108M06F24T-F        | 63.0                         | 0.26                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 1500                    | AFK158M06G24T-F        | 94.5                         | 0.26                                           | 0.080                                | 0.080                               | 850                                                | G            | 10 x 10.2             | 500                  |
| 3300                    | AFK338M06H32T-F        | 207.9                        | 0.30                                           | 0.060                                | 0.060                               | 1100                                               | H            | 12.5 x 13.5           | 200                  |
| 6800                    | AFK688M06P44T-F        | 428.4                        | 0.36                                           | 0.035                                | 0.035                               | 1800                                               | P            | 16 x 16.5             | 125                  |
| 10 Vdc ( 13 Vdc Surge ) |                        |                              |                                                |                                      |                                     |                                                    |              |                       |                      |
| 22                      | AFK226M10B12T-F        | 3.0                          | 0.19                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 33                      | AFK336M10B12T-F        | 3.3                          | 0.19                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 33                      | AFK336M10C12T-F        | 3.3                          | 0.19                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 150                     | AFK157M10D16T-F        | 15.0                         | 0.19                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 220                     | AFK227M10X16T-F        | 22.0                         | 0.19                                           | 0.340                                | 0.340                               | 280                                                | X            | 6.3 x 7.7             | 900                  |
| 220                     | AFK227M10E16T-F        | 22.0                         | 0.19                                           | 0.260                                | 0.260                               | 300                                                | E            | 8 x 6.2               | 1000                 |
| 330                     | AFK337M10F24T-F        | 33.0                         | 0.19                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 470                     | AFK477M10F24T-F        | 47.0                         | 0.19                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 680                     | AFK687M10F24T-F        | 68.0                         | 0.19                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 1000                    | AFK108M10G24T-F        | 100.0                        | 0.19                                           | 0.080                                | 0.080                               | 850                                                | G            | 10 x 10.2             | 500                  |
| 2200                    | AFK228M10H32T-F        | 220.0                        | 0.21                                           | 0.060                                | 0.060                               | 1100                                               | H            | 12.5 x 13.5           | 200                  |
| 4700                    | AFK478M10P44T-F        | 470.0                        | 0.25                                           | 0.035                                | 0.035                               | 1800                                               | P            | 16 x 16.5             | 125                  |
| 6800                    | AFK688M10R44T-F        | 680.0                        | 0.29                                           | 0.033                                | 0.033                               | 2060                                               | R            | 18 x 16.5             | 125                  |
| 16 Vdc ( 20 Vdc Surge ) |                        |                              |                                                |                                      |                                     |                                                    |              |                       |                      |
| 10                      | AFK106M16B12T-F        | 3.0                          | 0.16                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 22                      | AFK226M16B12T-F        | 3.5                          | 0.16                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 22                      | AFK226M16C12T-F        | 3.5                          | 0.16                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 47                      | AFK476M16C12T-F        | 7.5                          | 0.16                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 47                      | AFK476M16D16T-F        | 7.5                          | 0.16                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 68                      | AFK686M16D16T-F        | 10.9                         | 0.19                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 100                     | AFK107M16D16T-F        | 16.0                         | 0.16                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 150                     | AFK157M16X16T-F        | 24.0                         | 0.16                                           | 0.340                                | 0.340                               | 280                                                | X            | 6.3 x 7.7             | 900                  |
| 220                     | AFK227M16X16T-F        | 35.2                         | 0.16                                           | 0.340                                | 0.340                               | 280                                                | X            | 6.3 x 7.7             | 900                  |
| 220                     | AFK227M16E16T-F        | 35.2                         | 0.16                                           | 0.260                                | 0.260                               | 300                                                | E            | 8 x 6.2               | 1000                 |
| 330                     | AFK337M16F24T-F        | 52.8                         | 0.16                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 470                     | AFK477M16F24T-F        | 75.2                         | 0.16                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 680                     | AFK687M16G24T-F        | 108.8                        | 0.16                                           | 0.080                                | 0.080                               | 850                                                | G            | 10 x 10.2             | 500                  |
| 1500                    | AFK158M16H32T-F        | 240.0                        | 0.16                                           | 0.060                                | 0.060                               | 1100                                               | H            | 12.5 x 13.5           | 200                  |
| 3300                    | AFK338M16P44T-F        | 528.0                        | 0.20                                           | 0.035                                | 0.035                               | 1800                                               | P            | 16 x 16.5             | 125                  |
| 4700                    | AFK478M16R44T-F        | 752.0                        | 0.22                                           | 0.033                                | 0.033                               | 2060                                               | R            | 18 x 16.5             | 125                  |

# Type AFK -55 °C to 105 °C

## SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105 °C

| Cap<br>(µF)                    | Catalog<br>Part Number | Max.<br>DCL<br>2 min<br>(µA) | Max.<br>Dissipation<br>Factor<br>@120 Hz/20 °C | Max.<br>ESR<br>@100 kHz/20 °C<br>(Ω) | Impedance<br>@ 100 kHz/20 °C<br>(Ω) | Max.<br>Ripple Current<br>@ 100 kHz/105 °C<br>(mA) | Case<br>Code | Size<br>D x L<br>(mm) | Quantity<br>per Reel |
|--------------------------------|------------------------|------------------------------|------------------------------------------------|--------------------------------------|-------------------------------------|----------------------------------------------------|--------------|-----------------------|----------------------|
| <b>25 Vdc ( 31 Vdc Surge )</b> |                        |                              |                                                |                                      |                                     |                                                    |              |                       |                      |
| 10                             | AFK106M25B12T-F        | 3.0                          | 0.14                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 22                             | AFK226M25C12T-F        | 5.5                          | 0.14                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 33                             | AFK336M25C12T-F        | 8.3                          | 0.14                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 33                             | AFK336M25D16T-F        | 8.3                          | 0.14                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 47                             | AFK476M25D16T-F        | 11.8                         | 0.14                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 68                             | AFK686M25D16T-F        | 17.0                         | 0.14                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 100                            | AFK107M25X16T-F        | 25.0                         | 0.14                                           | 0.340                                | 0.340                               | 280                                                | X            | 6.3 x 7.7             | 900                  |
| 100                            | AFK107M25E16T-F        | 25.0                         | 0.14                                           | 0.260                                | 0.260                               | 300                                                | E            | 8 x 6.2               | 1000                 |
| 150                            | AFK157M25F24T-F        | 37.5                         | 0.14                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 220                            | AFK227M25F24T-F        | 55.0                         | 0.14                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 330                            | AFK337M25F24T-F        | 82.5                         | 0.14                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 470                            | AFK477M25G24T-F        | 117.5                        | 0.14                                           | 0.080                                | 0.080                               | 850                                                | G            | 10 x 10.2             | 500                  |
| 1000                           | AFK108M25H32T-F        | 250.0                        | 0.14                                           | 0.060                                | 0.060                               | 1100                                               | H            | 12.5 x 13.5           | 200                  |
| 1500                           | AFK158M25P44T-F        | 375.0                        | 0.14                                           | 0.035                                | 0.035                               | 1800                                               | P            | 16 x 16.5             | 125                  |
| 2200                           | AFK228M25P44T-F        | 550.0                        | 0.16                                           | 0.035                                | 0.035                               | 1800                                               | P            | 16 x 16.5             | 125                  |
| 3300                           | AFK338M25R44T-F        | 825.0                        | 0.18                                           | 0.033                                | 0.033                               | 2060                                               | R            | 18 x 16.5             | 125                  |
| <b>35 Vdc ( 44 Vdc Surge )</b> |                        |                              |                                                |                                      |                                     |                                                    |              |                       |                      |
| 4.7                            | AFK475M35B12T-F        | 3.0                          | 0.12                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 10                             | AFK106M35B12T-F        | 3.5                          | 0.12                                           | 1.350                                | 1.350                               | 90                                                 | B            | 4 x 5.8               | 2000                 |
| 10                             | AFK106M35C12T-F        | 3.5                          | 0.12                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 22                             | AFK226M35C12T-F        | 7.7                          | 0.12                                           | 0.700                                | 0.700                               | 160                                                | C            | 5 x 5.8               | 1000                 |
| 33                             | AFK336M35D16T-F        | 11.6                         | 0.12                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 47                             | AFK476M35D16T-F        | 16.5                         | 0.12                                           | 0.360                                | 0.360                               | 240                                                | D            | 6.3 x 5.8             | 1000                 |
| 68                             | AFK686M35X16T-F        | 23.8                         | 0.12                                           | 0.340                                | 0.340                               | 280                                                | X            | 6.3 x 7.7             | 900                  |
| 100                            | AFK107M35X16T-F        | 35.0                         | 0.12                                           | 0.340                                | 0.340                               | 280                                                | X            | 6.3 x 7.7             | 900                  |
| 100                            | AFK107M35F24T-F        | 35.0                         | 0.12                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 150                            | AFK157M35F24T-F        | 52.5                         | 0.12                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 220                            | AFK227M35F24T-F        | 77.0                         | 0.12                                           | 0.160                                | 0.160                               | 600                                                | F            | 8 x 10.2              | 500                  |
| 330                            | AFK337M35G24T-F        | 115.5                        | 0.12                                           | 0.080                                | 0.080                               | 850                                                | G            | 10 x 10.2             | 500                  |
| 470                            | AFK477M35H32T-F        | 164.5                        | 0.12                                           | 0.060                                | 0.060                               | 1100                                               | H            | 12.5 x 13.5           | 200                  |
| 680                            | AFK687M35H32T-F        | 238.0                        | 0.12                                           | 0.060                                | 0.060                               | 1100                                               | H            | 12.5 x 13.5           | 200                  |
| 1000                           | AFK108M35P44T-F        | 350.0                        | 0.12                                           | 0.035                                | 0.035                               | 1800                                               | P            | 16 x 16.5             | 125                  |
| 1500                           | AFK158M35P44T-F        | 525.0                        | 0.12                                           | 0.035                                | 0.035                               | 1800                                               | P            | 16 x 16.5             | 125                  |
| <b>50 Vdc ( 63 Vdc Surge )</b> |                        |                              |                                                |                                      |                                     |                                                    |              |                       |                      |
| 4.7                            | AFK475M50B12T-F        | 3.0                          | 0.10                                           | 2.900                                | 2.900                               | 60                                                 | B            | 4 x 5.8               | 2000                 |
| 10                             | AFK106M50C12T-F        | 5.0                          | 0.10                                           | 1.520                                | 1.520                               | 85                                                 | C            | 5 x 5.8               | 1000                 |
| 10                             | AFK106M50D16T-F        | 5.0                          | 0.10                                           | 0.880                                | 0.880                               | 165                                                | D            | 6.3 x 5.8             | 1000                 |
| 22                             | AFK226M50D16T-F        | 11.0                         | 0.10                                           | 0.880                                | 0.880                               | 165                                                | D            | 6.3 x 5.8             | 1000                 |
| 33                             | AFK336M50X16T-F        | 16.5                         | 0.10                                           | 0.680                                | 0.680                               | 195                                                | X            | 6.3 x 7.7             | 900                  |
| 33                             | AFK336M50E16T-F        | 16.5                         | 0.10                                           | 0.680                                | 0.680                               | 195                                                | E            | 8 x 6.2               | 1000                 |
| 47                             | AFK476M50X16T-F        | 23.5                         | 0.10                                           | 0.680                                | 0.680                               | 195                                                | X            | 6.3 x 7.7             | 900                  |
| 47                             | AFK476M50E16T-F        | 23.5                         | 0.10                                           | 0.680                                | 0.680                               | 195                                                | E            | 8 x 6.2               | 1000                 |
| 100                            | AFK107M50F24T-F        | 50.0                         | 0.10                                           | 0.340                                | 0.340                               | 350                                                | F            | 8 x 10.2              | 500                  |

# Type AFK -55 °C to 105 °C

## SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105 °C

| Cap<br>(µF)                     | Catalog<br>Part Number | Max.<br>DCL<br>2 min<br>(µA) | Max.<br>Dissipation<br>Factor<br>@ 120 Hz/20 °C | Max.<br>ESR<br>@ 100 kHz/20 °C<br>(Ω) | Impedance<br>@ 100 kHz/20 °C<br>(Ω) | Max.<br>Ripple Current<br>@ 100 kHz/105 °C<br>(mA) | Case<br>Code | Size<br>D x L<br>(mm) | Quantity<br>per Reel |
|---------------------------------|------------------------|------------------------------|-------------------------------------------------|---------------------------------------|-------------------------------------|----------------------------------------------------|--------------|-----------------------|----------------------|
| <b>50 Vdc ( 63 Vdc Surge )</b>  |                        |                              |                                                 |                                       |                                     |                                                    |              |                       |                      |
| 150                             | AFK157M50G24T-F        | 75.0                         | 0.10                                            | 0.180                                 | 0.180                               | 670                                                | G            | 10 x 10.2             | 500                  |
| 220                             | AFK227M50G24T-F        | 110.0                        | 0.10                                            | 0.180                                 | 0.180                               | 670                                                | G            | 10 x 10.2             | 500                  |
| 330                             | AFK337M50H32T-F        | 165.0                        | 0.10                                            | 0.120                                 | 0.120                               | 900                                                | H            | 12.5 x 13.5           | 200                  |
| 390                             | AFK397M50H32T-F        | 195.0                        | 0.10                                            | 0.120                                 | 0.120                               | 900                                                | H            | 12.5 x 13.6           | 200                  |
| 470                             | AFK477M50P44T-F        | 235.0                        | 0.10                                            | 0.073                                 | 0.073                               | 1610                                               | P            | 16 x 16.5             | 125                  |
| 560                             | AFK567M50P44T-F        | 280.0                        | 0.10                                            | 0.073                                 | 0.073                               | 1610                                               | P            | 16 x 16.5             | 125                  |
| 680                             | AFK687M50P44T-F        | 340.0                        | 0.10                                            | 0.073                                 | 0.073                               | 1610                                               | P            | 16 x 16.5             | 125                  |
| 1000                            | AFK108M50P44T-F        | 500.0                        | 0.10                                            | 0.073                                 | 0.073                               | 1610                                               | P            | 16 x 16.5             | 125                  |
| <b>63 Vdc ( 75 Vdc Surge )</b>  |                        |                              |                                                 |                                       |                                     |                                                    |              |                       |                      |
| 4.7                             | AFK475M63C12T-F        | 3.0                          | 0.08                                            | 3.000                                 | 3.000                               | 50                                                 | C            | 5 x 5.8               | 1000                 |
| 10                              | AFK106M63D16T-F        | 6.3                          | 0.08                                            | 1.500                                 | 1.500                               | 80                                                 | D            | 6.3 x 5.8             | 1000                 |
| 22                              | AFK226M63X16T-F        | 13.9                         | 0.08                                            | 1.200                                 | 1.200                               | 120                                                | X            | 6.3 x 7.7             | 900                  |
| 22                              | AFK226M63E16T-F        | 13.9                         | 0.08                                            | 1.200                                 | 1.200                               | 120                                                | E            | 8 x 6.2               | 1000                 |
| 33                              | AFK336M63F24T-F        | 20.8                         | 0.08                                            | 0.650                                 | 0.650                               | 250                                                | F            | 8 x 10.2              | 500                  |
| 47                              | AFK476M63F24T-F        | 29.6                         | 0.08                                            | 0.650                                 | 0.650                               | 250                                                | F            | 8 x 10.2              | 500                  |
| 68                              | AFK686M63G24T-F        | 42.8                         | 0.08                                            | 0.350                                 | 0.350                               | 400                                                | G            | 10 x 10.2             | 500                  |
| 100                             | AFK107M63G24T-F        | 63.0                         | 0.08                                            | 0.350                                 | 0.350                               | 400                                                | G            | 10 x 10.2             | 500                  |
| 150                             | AFK157M63H32T-F        | 94.5                         | 0.08                                            | 0.160                                 | 0.160                               | 800                                                | H            | 12.5 x 13.5           | 200                  |
| 220                             | AFK227M63H32T-F        | 138.6                        | 0.08                                            | 0.160                                 | 0.160                               | 800                                                | H            | 12.5 x 13.5           | 200                  |
| 470                             | AFK477M63P44T-F        | 296.1                        | 0.08                                            | 0.082                                 | 0.082                               | 1410                                               | P            | 16 x 16.5             | 125                  |
| 680                             | AFK687M63R44T-F        | 428.4                        | 0.08                                            | 0.080                                 | 0.080                               | 1690                                               | R            | 18 x 16.5             | 125                  |
| <b>80 Vdc ( 100 Vdc Surge )</b> |                        |                              |                                                 |                                       |                                     |                                                    |              |                       |                      |
| 3.3                             | AFK335M80C12T-F        | 3.0                          | 0.08                                            | 5.00                                  | 5.00                                | 25                                                 | C            | 5 x 5.8               | 1000                 |
| 4.7                             | AFK475M80D16T-F        | 3.8                          | 0.08                                            | 3.00                                  | 3.00                                | 40                                                 | D            | 6.3 x 5.8             | 1000                 |
| 10.0                            | AFK106M80X16T-F        | 8.0                          | 0.08                                            | 2.40                                  | 2.40                                | 60                                                 | X            | 6.3 x 7.7             | 900                  |
| 10.0                            | AFK106M80E16T-F        | 8.0                          | 0.08                                            | 2.40                                  | 2.40                                | 60                                                 | E            | 8 x 6.2               | 1000                 |
| 22.0                            | AFK226M80F24T-F        | 17.6                         | 0.08                                            | 1.30                                  | 1.30                                | 130                                                | F            | 8 x 10.2              | 500                  |
| 33.0                            | AFK336M80F24T-F        | 26.4                         | 0.08                                            | 1.30                                  | 1.30                                | 130                                                | F            | 8 x 10.2              | 500                  |
| 47.0                            | AFK476M80G24T-F        | 37.6                         | 0.08                                            | 0.70                                  | 0.70                                | 200                                                | G            | 10 x 10.2             | 500                  |
| 68.0                            | AFK686M80H32T-F        | 54.4                         | 0.08                                            | 0.32                                  | 0.32                                | 500                                                | H            | 12.5 x 13.5           | 200                  |
| 100.0                           | AFK107M80H32T-F        | 80.0                         | 0.08                                            | 0.32                                  | 0.32                                | 500                                                | H            | 12.5 x 13.5           | 200                  |
| 150.0                           | AFK157M80H32T-F        | 120.0                        | 0.08                                            | 0.32                                  | 0.32                                | 500                                                | H            | 12.5 x 13.5           | 200                  |
| 330.0                           | AFK337M80P44T-F        | 264.0                        | 0.08                                            | 0.17                                  | 0.17                                | 793                                                | P            | 16 x 16.5             | 125                  |
| 470.0                           | AFK477M80R44T-F        | 376.0                        | 0.08                                            | 0.15                                  | 0.15                                | 917                                                | R            | 18 x 16.5             | 125                  |
| <b>100 Vdc (125 Vdc Surge )</b> |                        |                              |                                                 |                                       |                                     |                                                    |              |                       |                      |
| 22.0                            | AFK226M2AF24T-F        | 22.0                         | 0.07                                            | 1.30                                  | 1.30                                | 130                                                | F            | 8 x 10.2              | 500                  |
| 33.0                            | AFK336M2AG24T-F        | 33.0                         | 0.07                                            | 0.70                                  | 0.70                                | 200                                                | G            | 10 x 10.2             | 500                  |
| 47.0                            | AFK476M2AH32T-F        | 47.0                         | 0.07                                            | 0.32                                  | 0.32                                | 500                                                | H            | 12.5 x 13.5           | 200                  |
| 68.0                            | AFK686M2AH32T-F        | 68.0                         | 0.07                                            | 0.32                                  | 0.32                                | 500                                                | H            | 12.5 x 13.5           | 200                  |
| 100.0                           | AFK107M2AP44T-F        | 100.0                        | 0.07                                            | 0.17                                  | 0.17                                | 793                                                | P            | 16 x 16.5             | 125                  |
| 150.0                           | AFK157M2AP44T-F        | 150.0                        | 0.07                                            | 0.17                                  | 0.17                                | 793                                                | P            | 16 x 16.5             | 125                  |
| 220.0                           | AFK227M2AR44T-F        | 220.0                        | 0.07                                            | 0.15                                  | 0.15                                | 917                                                | R            | 18 x 16.5             | 125                  |
| 330.0                           | AFK337M2AR44T-F        | 330.0                        | 0.07                                            | 0.15                                  | 0.15                                | 917                                                | R            | 18 x 16.5             | 125                  |

Type AFK -55 °C to 105 °C

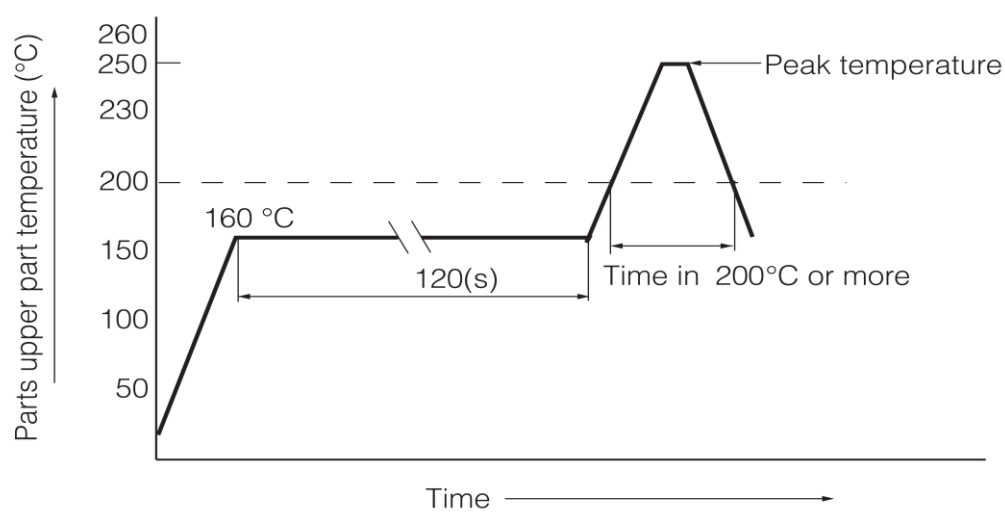
SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105 °C

Part Numbering System

|                 |             |                       |              |             |                   |                |
|-----------------|-------------|-----------------------|--------------|-------------|-------------------|----------------|
| AFK             | 106         | M                     | 16           | B           | 12T               | -F             |
| Type            | Capacitance | Capacitance Tolerance | Voltage Code | Case Code   | Packaging Code    | RoHS Compliant |
| 105 = 1.0 µF    |             |                       | 06 = 6.3 Vdc | 35 = 35 Vdc | 12 = Carrier tape |                |
| 106 = 10.0 µF   | M = ±20%    |                       | 10 = 10 Vdc  | 50 = 50 Vdc | Width (mm)        |                |
| 107 = 100.0 µF  |             |                       | 16 = 16 Vdc  | 63 = 63 Vdc | T = Tape & Reel   |                |
| 108 = 1000.0 µF |             |                       | 25 = 25 Vdc  | 80 = 80 Vdc | B = Bulk          |                |
|                 |             |                       | 2A = 100 Vdc |             |                   |                |

Reflow Solder

|                   |           |          |             |
|-------------------|-----------|----------|-------------|
| Diameter          | 4 - 6.3mm | 8 - 10mm | 12.5 - 18mm |
| Peak Temperature  | 250°C     | 235°C    | 230°C       |
| Duration at Peak  | 5s        | 5s       | 5s          |
| Time ≥200°C       | 60s       | 60s      | 20s         |
| Number of Reflows | 1         | 1        | 1           |

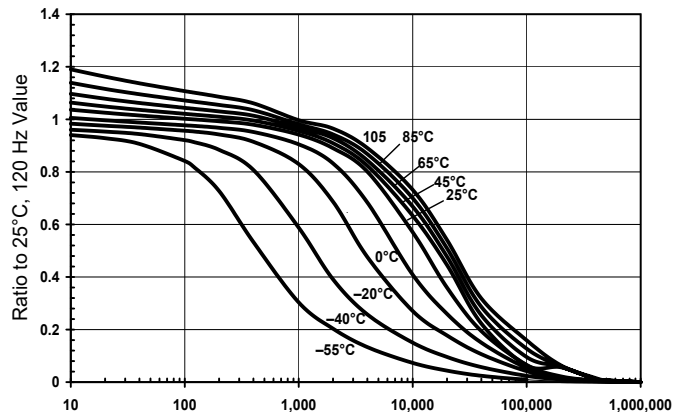


**Type AFK -55 °C to 105 °C**

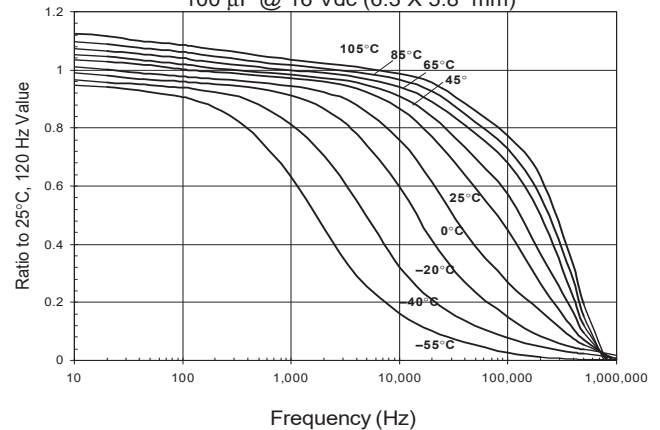
**SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105 °C**

## Typical Performance Curves

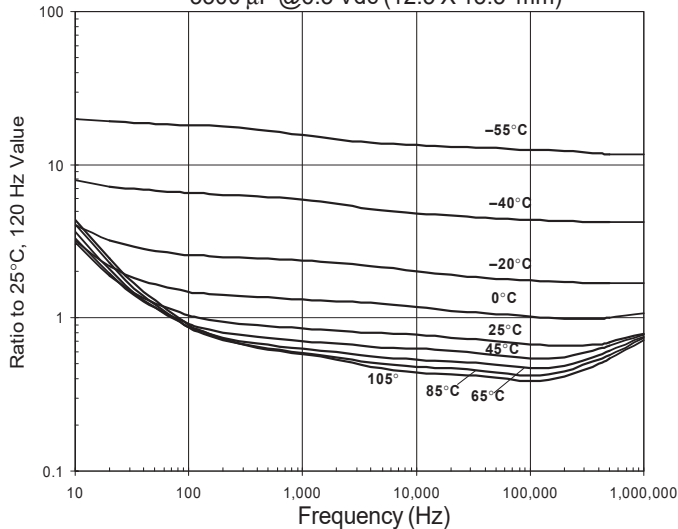
Capacitance vs. Temperature and Frequency  
3300 $\mu$ F/6.3Vdc (12.5 x 13.5 mm)



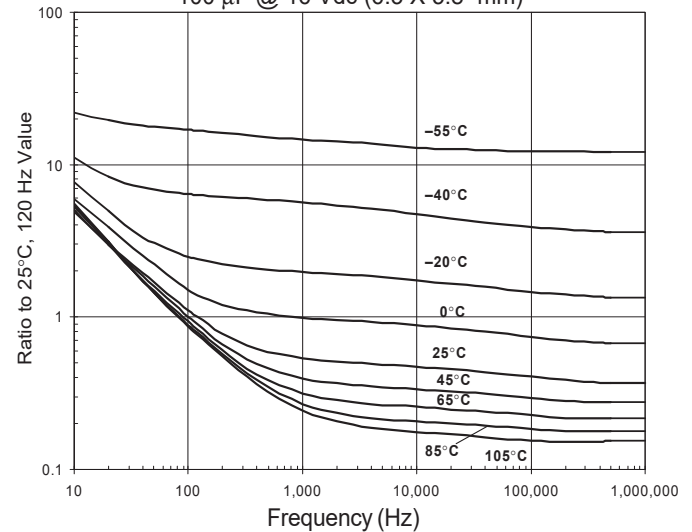
Capacitance vs. Temperature & Frequency  
100  $\mu$ F @ 16 Vdc (6.3 X 5.8 mm)



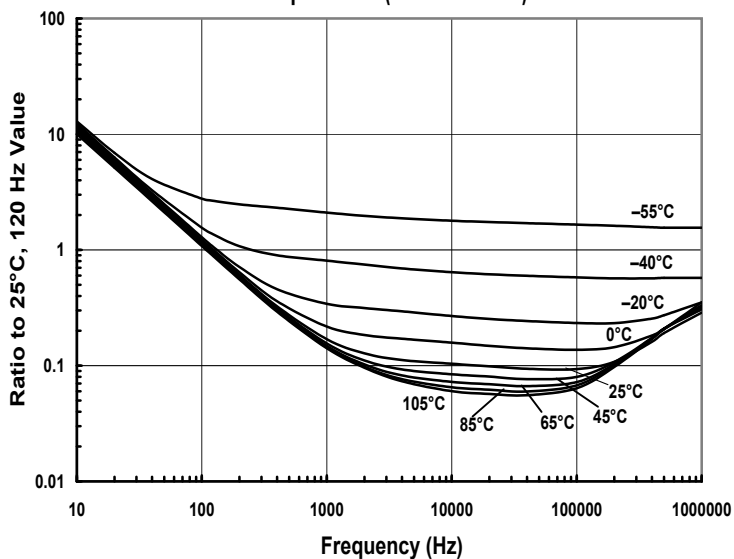
ESR vs. Temperature and Frequency  
3300  $\mu$ F @ 6.3 Vdc (12.5 X 13.5 mm)



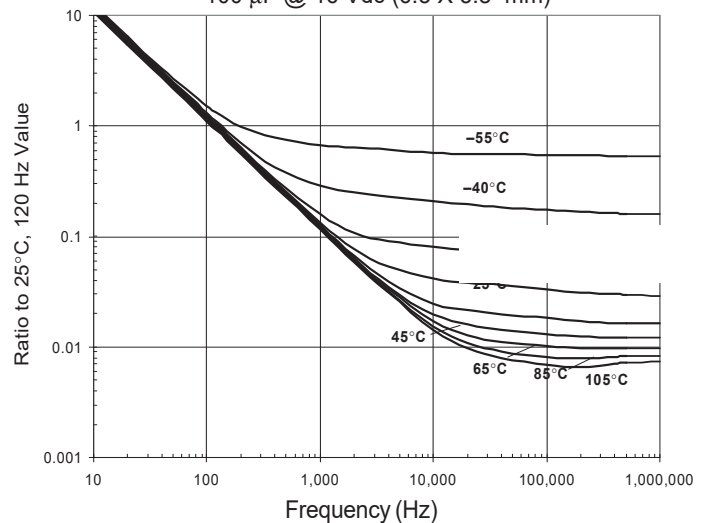
ESR vs. Temperature and Frequency  
100  $\mu$ F @ 16 Vdc (6.3 X 5.8 mm)

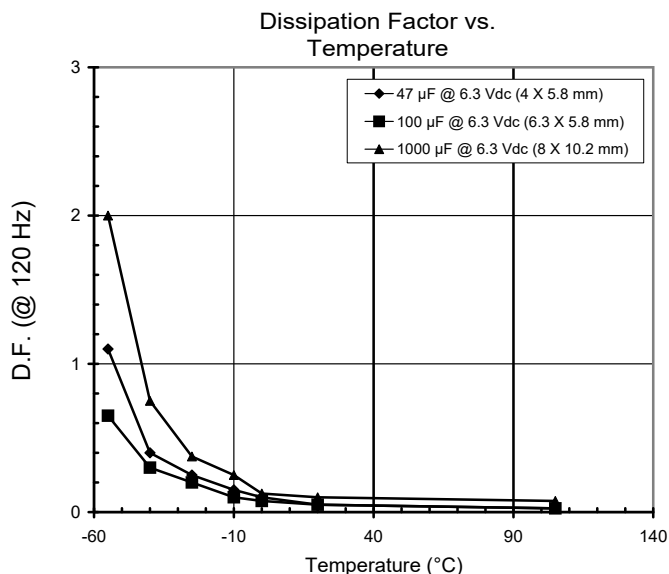
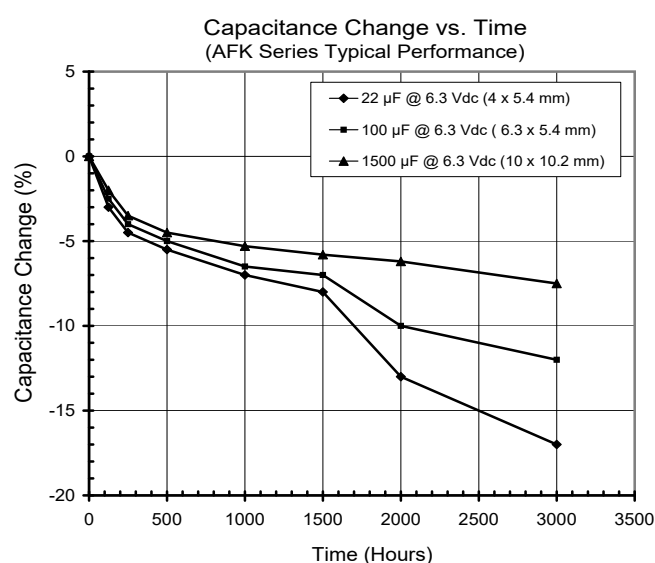


Impedance vs Temperature and Frequency  
3300  $\mu$ F /6.3 V (12.5 x13.5mm)



Impedance vs. Temperature and Frequency  
100  $\mu$ F @ 16 Vdc (6.3 X 5.8 mm)



**Typical Performance Curves**

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